REMARKS

This application has been reviewed in light of the Office Action dated March 22, 2004. Claims 1, 2, 4-8, 10-14, 16-20 and 22-28 are presented for examination, of which Claims 3, 9, 15 and 21 are in independent form. Claims 1, 7, 13 and 19 have been cancelled, without prejudice or disclaimer of subject matter, and Claims 25-28 have been added to provide Applicants with a more complete scope of protection. Claims 2-6, 8-12, 14-18 and 20-24 have been amended to define still more clearly what Applicants regard as their invention. Favorable reconsideration is requested.

In response to paragraph 8 of the Office Action, a substitute specification is submitted herewith, in both marked and clean versions; no new matter has been added.

Claims 1, 2, 7, 8, 19 and 20 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,666,159 (Parulski et al.). Claims 13 and 14 were rejected under 35 U.S.C. § 103(a) as being obvious from *Parulski*, Claims 3, 9, 15 and 21 were rejected under Section 103(a) as being obvious from *Parulski* in view of U.S. Patent 5,909,648 (Boudreaux et al.), and Claims 4-6, 10-12 and 22-24, as being obvious from *Parulski* in view of U.S. Patent 5,806,005 (Hull et al.).

As is described in the specification, the present invention concerns technology for radio transmission of image data that have been obtained by means of an image pick-up process, such as digital photography. One feature disclosed in the present application is that of making a break in communication between a source of an image and a transmission destination, after the lapse of a given time from when the image pickup operation is completed or the transmission of the pickup image is completed.

Independent Claim 3, for example, is directed to a communication device connected to an image pickup device for photographing a subject, and comprising intake means for taking in images from the image pickup device, and communicative means for transmitting the pickup images to a transmission destination in communication therewith. Control means are provided for starting an operation of the communicative means in response to the image pickup operation, and control the communicative means so as to make a break in communication with the transmission destination after the lapse of a given time from the time when the transmission of the pickup image is completed.[1]

The Office Action, while rejecting Claim 1 as anticipated by *Parulski*, recognized that that patent does not teach or suggest control means controlling communicative means such as to make a break in communication with a transmission destination after the lapse of a given time from completion of the transmission of a picked-up image, as is now recited in Claim 1 (see page 4, second sentence, of the Office Action). For that feature, the Examiner cited *Boudreaux*.

Boudreaux relates to a network interface arranged to terminate a connection between two parties, connected to two networks (e.g., a mobile unit and another unit), that are in communication with each other, when one of the parties requests disconnection. The interface does not effect the termination of communication, however, until it has determined that no buffered data is awaiting transfer to the other party, and if such data does exist, it is sent on to the

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[1] It should be noted that the present independent claims are merely original dependent Claims 3, 9, 15 and 21, rewritten in independent form, which additional purely formal changes that do not in any way affect the scope of these claims. Thus, if the next Office Action rejects any of these claims on grounds different from those relied upon in the present Office Action, Applicants note that such Action cannot properly be made final.

latter party, and only then is disconnection performed (see Figs. 2B and 2C, and col. 3, lines 20-60). In the passage specifically cited in the Office Action, the mobile switching center ("MSC") 140 is described as completing its call clearing process, and sending a message IWF-Release-Request message toward the network-side party ("NSP"), which among other things is a notification to the latter side that any data remaining for transfer to the other party, must now be forwarded. Before this message is sent, the MSC sets a timer $T_{iwf\text{-}rel}$. If no response has been received by the time this timer expires, the timer is re-set, and the MSC repeats its dialog (col. 3, lines 46-48). If no response has been received by the second timing out, the call is immediately terminated, and the call is cleared, with an error status (col. 3, lines 48-51).

Applicants submit that, even assuming this feature could properly be combined with *Parulski*, the result would not meet the terms of Claim 1. The timer $T_{iwf\text{-}rel}$ does not time out a given time after completion of transmission, but rather times out at any of several possible timings relative to completion of transmission. If no response is received to the message that is sent by the MSC 140 just after the initiation of this timer, and no response is received after the resetting of the timer, then the connection is ended at approximately twice the duration timed by this timer, if on the other hand, a response is received, before resetting of the timer, and the content of the response is that no remaining needs to be flushed from the buffer, then the connection is terminated even before the timer has timed out once; and third, if the response is received that data does remain in the buffer, then the connection is not terminated, but rather is maintained to permit the flushing of that data. Accordingly, even if the proposed combination of *Boudreaux* with *Parulski* is made, the result would not make a break in communication upon the lapse of a given time after completion of transmission, as recited in Claim 3, but would use a

timer to determine whether there is more data still to be forwarded to the destination side, and if so would prolong the connection to permit flushing of that data. Thus, even assuming for argument's sake that the proposed combination would be proper, the result would not meet terms of Claim 3, and thus that claim is believed clearly to be allowable over *Parulski* and *Boudreaux*, taken separately or in any permissible combination.

Each of the other independent claims contains recitations similar to those of Claim 3 and discussed above, and each is also considered to be allowable at least by virtue of the arguments presented above in connection with Claim 3.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other rejected claims in this application depend from one or another of the independent claims discussed above and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual consideration or reconsideration, as the case may be, of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

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TITLE

COMMUNICATION DEVICE, IMAGE-PICKUP DEVICE, STORAGE MEDIUM AND COMMUNICATION METHOD

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to ~~the art used in~~ a device or system ~~having an~~ for image-pickup ~~function~~ and ~~communicative function, and in~~ communication. In particular ~~to the art using the communicative function~~ the present invention relates to a device or system for radio transmission of an image ~~information item~~ obtained by the image pick-up function of the device or system.

Related Background Art

[0002] ~~So far, when radio-transmitting the~~ Prior to the present invention, radio transmission of a picture or image ~~obtained by the image-pickup function of~~ from a digital camera or the like to a second device, such as a remote ~~place~~ server, ~~through~~ using a communication device, such as portable phone or PHS (Personal Handyphone System), ~~the following method is generally used~~ required the connection of devices, as illustrated in Fig. 12.

[0003] As shown in Fig. 12, for example, ~~connection between~~ a digital camera 501 ~~and~~ is connected to a ~~note model~~ personal computer (hereinafter, referred to as "~~Note~~ PC") 502, such as a notebook computer, ~~has been made~~ using a cable 504 (or a PC card), and ~~connection between a Note~~ the PC 502 ~~and~~ is connected to a ~~potable~~ portable phone 503 ~~is also made by~~ using a cable ~~504~~ 508. Then, the pickup image obtained ~~by using~~ with the digital camera 501 is transferred to the portable phone 503 ~~after once transferred to~~ through the ~~Note~~ PC 502. ~~Thus, as~~ As shown in Fig. 13, the pickup image ~~transferred to the portable phone 503~~ is then ~~radio-transmitted~~ transmitted by the portable phone 503 via a general public network 506 to a remote server 507 ~~located at a remote place~~.

[0004] ~~However,~~ Although such a method was advantageous in that a ~~former device~~ digital camera and portable phone could be utilized ~~as it was~~ without any substantial modification, ~~but with disadvantageous problems that the construction became~~ the combination of devices is so complicated ~~as to damage~~ that it interferes with at least one of the portability ~~or~~ and manipulativity of the digital camera.

[0005] ~~Then, to~~ To solve ~~these~~ the problems associated with the prior art method, a composite device (or multifunctional device) 510, as shown in Fig. 14, has been proposed. The proposed composite device 510 has ~~having~~ the image-pickup ~~function~~ capability of a digital camera or the like and the ~~communicative function~~ communication capability of a portable phone, a PHS or the like~~, for example, as shown in Fig. 14, has been proposed~~.

[0006] As shown in Fig. 14, the composite device 510 comprises a lens 511 for focusing ~~a subject ray to~~ light rays onto an image pickup element, such as a CCD, a shutter button (shutter ~~switch~~) 512, a switch group 513, comprising ~~made of~~ a plurality of ~~manipulating~~ switches, a color LCD (Liquid Crystal Display) 514 for displaying the pickup image obtained by the ~~above~~ image pickup element and an ~~communicative~~ antenna 515.

[0007] ~~With such a composite device 510, a~~ The process ~~from the~~ for photographing ~~of~~ a subject, and ~~to the radio transmission of~~ transmitting the pickup image ~~thereby~~

~~obtained~~ to a server by telephone may be ~~is~~ executed~~, for example,~~ according to the flow charts ~~of~~ provided in Figs. 15 and 16.

[0008] First, as illustrated in ~~of all (See~~ Fig. 15[[)]], ~~a user set up a~~ the composite device 510 is set to the photographing mode by ~~manipulating a given manipulating~~ setting the required switch in the switch group 513, ~~instructs the start of a~~ and the photographing operation ~~and depresses a~~ is initiated by depressing the shutter ~~switch~~ 512 at ~~a~~ the desired ~~timing~~ time in [[(]]step S521[[)]].

[0009] ~~Thereby~~ As a result, an interruption occurs in the composite device 510 in [[(]]step S522[[)]], and the pickup image signal of ~~a~~ the subject obtained with a pickup element is ~~once taken into~~ stored in an image buffer memory in [[(]]step S523[[)]].

[0010] After various corrections ~~on~~ of brightness, white balance or the like, the format of the pickup image signal ~~incorporated into~~ stored in the image buffer memory is ~~submitted to a format conversion into the~~ converted to the JPEG format or the like in [[(]]step S524[[)]].

[0011] The converted pickup image data ~~made up through such steps~~ is then ~~finally~~ stored ~~into a store~~ in memory in [[(]]step S525[[)]].

[0012] Next, as illustrated in [[(]]See Fig. 16~~), if the~~ for image pickup data ~~obtained thus in the~~ that are transmitted from the composite device 510 ~~are transmitted~~ to a remote ~~place~~ server, a user sets the composite device 510 to the transmit mode by ~~manipulating a given~~ manipulating the required switch in the switch group 513 in [[(]]step S531[[)]].

[0013] ~~Incidentally~~ In the alternative, instead of manipulating the required switch in the switch group 513, a mode-switching ~~manipulation here~~ operation may be ~~made~~ performed on the menu screen of ~~a~~ the color LCD 514~~. Besides~~, or ~~the~~ step S531 may be executed after ~~the~~ step S534 ~~mentioned later~~ discussed below.

[0014] ~~Thereby, in~~ In the transmit mode, the composite device 510[[,]] ~~read of the~~ reads the pickup image data stored in the store memory ~~is started~~ in [[(]]step S532, [[).]] ~~And,~~ and the readout pickup image data are ~~screen-displayed by means of~~ displayed on the color LCD 514 in [[(]]step S533[[)]].

[0015] By manipulating ~~a given manipulating~~ the desired switch in the switch group 513, a user selects an image to be transmitted from the pickup image data screen-displayed on the color LCD 514 in [[(]]step S534[[)]]. ~~Selecting an image at this time relates to a single image, two images or more,~~ Any or all of the images stored in the store memory may be selected for transmission.

[0016] ~~Besides, by manipulating a given manipulating~~ By manipulating the required switch in the switch group 513, a user selects the partner server to ~~whom to transmit~~ which the image selected ~~at the~~ in step S534 is to be transmitted in [[(]]step S535[[)]]. ~~In selecting a server at this time, a method of selecting it~~ The server to which the pickup image is to be transmitted may be selected from the phone book data ~~preliminarily~~ stored ~~inside~~ in the composite device 510, or ~~directly inputting~~ the ~~partner~~ phone number ~~from~~ of the server may be input directly using the switch group 513 or the like.

[0017] ~~In the~~ The composite device 510~~, a processing for confirming~~ confirms the image to be transmitted and the transmission destination ~~to a user is performed~~ when the user ~~manipulation at the~~ performs steps S534 and S535 ~~is recognized at the composite device 510~~ in [[(]]step S536[[)]]. As a result, ~~if an instruction of~~ upon receipt of an "OK" ~~is made from a~~ from the user by means of a switch in the switch group 513 or the like, the transmission of the image ~~transmission processing from the next step~~ is ~~actually~~ executed.

[0018] ~~Incidentally~~ However, if the user provides the instruction ~~made from a user is~~ "NG", the ~~procedure is returned~~ composite device 510 returns to ~~the~~ step S534 ~~and the processing from~~ for the determination of an image to be transmitted ~~is executed~~.

[0019] ~~Namely, first, according to a procedure depending~~ Depending on the type of ~~a~~ composite device 510 (for example, if the ~~communicative~~ communication function ~~pertaining to~~ of the device is PHS, ~~for example,~~ a transmission control procedure like "PIAFS: PHS Internet Access Forum Standard"), a call ~~generation to~~ is placed with the public network ~~is made~~ in [[(]]step S537[[)]]. ~~Thereby, to the composite device 510,~~

~~the~~ In response, an OK or NG ~~of call reception~~ signal is sent back from the call destination server.

[0020] ~~And, if the server is capable of being called as a result of confirming the~~ If reception of the call is confirmed by an OK ~~or NG of call reception~~ signal from the server in [[(]]step S538[[)]], an inter-device connection between the composite device 510 and the server is established after a mutual negotiation processing in [[(]]step S539[[)]].

[0021] When the negotiation between the composite device 510 and the server is completed, and the communication according to a protocol such as TCP/IP (Transmission Control Protocol/Internet Protocol) becomes possible, ~~processing for transmitting~~ transmission of the image selected at ~~the~~ step S534 to the server is executed ~~in~~ by the composite device 510 in [[(]]step S540[[)]]. ~~The error~~ Error processing ~~during a communication~~, retransmit processing, or the like is performed at this time ~~is performed~~ according to the procedure or protocol, depending on the type of a composite device 510, at ~~the~~ step S537, until ~~and finally~~ all of the selected images are ~~finished at transmission~~ transmitted, or the communication with the server ends ~~at the time point~~ in [[(]]step S541[[)]] ~~of receiving the message~~ upon receipt of a receive end signal from the server in [[(]]step S542[[)]].

[0022] On the other hand, if connection with the server is ~~incapable of being called as a result of confirming the OK or RG of call reception therefrom~~ not possible in [[(]]step S538[[)]], ~~that is, if call reception is disapproved for the reason of being~~ such as, as a result of the server being busy or the like, ~~therefrom~~ in [[(]]step S543[[)]], the composite device 510 displays a message on the ~~a~~ screen display ~~of the message displaying~~ to this effect ~~is performed in the composite device 510~~ in [[(]]step S544[[)]].

[0023] In this case, to transmit the image, a user must again attempt ~~a reconnection after the lapse of some~~ to connect with the remote server after a period of time.

[0024] ~~Meanwhile, at the background of~~ In addition, a composite device 510 of the type proposed, and as shown in Fig. 14, ~~it can be referred to that promotion of an~~

~~instance~~ can provide an instant response ~~based on~~ to the ~~transmittance~~ transmission of an image, if ~~on the spot is~~ requested, in addition to ~~the~~ providing portability and manipulativity[[.]], making the transmission of ~~For this object, it is desired that the procedure for transmitting an~~ a photographic image ~~after the photographing is~~ as simple and easy as possible.

[0025] With ~~a former~~ the proposed composite device 510, however, a user ~~needed~~ is required to perform at least three ~~times~~ switching ~~manipulations of~~ operations in ~~the~~ step S531 (changing mode ~~changing manipulation~~), ~~the~~ step S534 (selecting manipulation ~~of a transmit~~ the image for transmission), and ~~the~~ step S535 (selecting ~~manipulation of~~ a transmission destination) to transmit the pickup image obtained in the photographing mode to the server as shown in Fig. 16.

[0026] ~~This provides~~ There is no problem with this procedure when ~~no~~ an instantaneous response is ~~so much~~ not required, such as in the case of ~~transmitting~~ the later transmission of a collection of accumulated photograph images ~~collectively afterward~~, but becomes very troublesome, for example, in ~~a~~ the case where it is desired to transmit only one image ~~of the subject before eyes~~ to a server, or ~~like~~ in similar cases.

[0027] ~~Besides, also~~ In addition, in a case where it is desired to transmit successive photographed images to a server during the continuous ~~photographing but not~~ photography of images, rather than a single image only, the ~~photographing~~ photography must be interrupted ~~once~~ for ~~the~~ each transmission, and, thus, the ~~there occurs a~~ possibility of missing a ~~shutter chance~~ a photograph during this interruption exists.

SUMMARY OF THE INVENTION

[0028] It is one object of the present invention to solve all or at least one of the problems mentioned above.

[0029] ~~Besides, it~~ It is another object of the present invention to reduce the ~~troublesomeness in~~ the problems associated with transmitting image data.

[0030] Furthermore, it is still another object of the present invention to transmit an image without ~~any damage to~~ interfering with the instantaneous response of the image pickup means.

[0031] ~~Under~~ In accordance with these objects, one preferred embodiment of the present invention is directed to a communication device connected to a image pickup device for photographing a subject. The communication device comprises ~~comprising~~ intake means for taking in an image from the ~~above~~ image pickup device, ~~communicative~~ communication means for transmitting the pickup image taken ~~in by~~ with the intake means to a transmission destination in communication therewith, and control means for starting the operation of the ~~communicative~~ communication means in response to the image pickup operation ~~is disclosed according to one preferred embodiment of the present invention~~.

[0032] Still further, it is an object of the present invention to provide a communication device ~~available~~ that provides communication of an image anywhere.

[0033] Under this object, ~~it is disclosed~~ according to another preferred embodiment of the present invention, ~~that~~ the ~~above communicative~~ communication means ~~radio-transmits~~ is a radio transmitter.

[0034] Still further, it is another object of the present invention to enhance the availability and economics of ~~communicative~~ the communication means.

[0035] Under this object, ~~it is disclosed~~ according to another preferred embodiment of the present invention, ~~that~~ the ~~above~~ control means controls the ~~above communicative~~ communication means ~~so as to make an interruption of~~ to interrupt communication with a communication destination after ~~the lapse of~~ a given amount of time after the completion of the transmission of the ~~above~~ pickup image.

[0036] Furthermore, it is yet another object of the present invention to make the communication device appropriately cope with the communication state of another ~~communicative~~ communication means.

[0037] Under this object, ~~it is disclosed~~ according to yet another preferred embodiment of the present invention, a ~~that the store~~ means for storing the pickup

images obtained from the ~~above~~ image pickup means is ~~further~~ also provided, and the ~~above communicative~~ communication means includes ~~detective~~ detection means for detecting the state of communication with the ~~above~~ transmission destination, and the ~~above~~ control means stores the ~~above~~ pickup image once into the ~~above store~~ means for storing images on the basis of the ~~detected~~ result detected by the ~~above~~ detective means.

[0038] Furthermore, ~~it is disclosed that, in case of being incommunicable~~ where, based on the detected result by the ~~above~~ detective means, communication is not possible, the ~~above~~ control means ~~once~~ stores the ~~above~~ pickup image once into the ~~above store~~ means for storing images, and the pickup image stored in the ~~above store~~ means for storing images is transmitted by the ~~above communicative~~ communication means ~~in case of becoming communicable~~ when communication is possible.

[0039] Furthermore, ~~it is disclosed that~~ the ~~above~~ control means ~~makes a~~ controls ~~so as to perform an operation of~~ the ~~above~~ detective means and the ~~above~~ operation based on the detected result in the ~~above~~ detective means in parallel with the ordinary operation of the device.

[0040] ~~Besides, it~~ It is yet another object of the present invention to provide an image pickup device or a communication method having ~~a~~ the novel functions of the present intention or, alternatively, a storage medium for realizing the novel functions of such a device or method ~~by using~~ with a computer.

[0041] The other objects and characteristics of the present invention ~~would~~ will be apparent from the description of the following embodiments and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0042] Fig. 1, which is composed of Figs. 1A and 1B, is a block diagram showing the configuration of a composite device according to one embodiment of the present invention ~~with the first embodiment~~;

[0043] Fig. 2 is a flow chart ~~for explaining~~ illustrating the ~~processing extending~~ transmission of a pickup image in the ~~above composite device~~ embodiment of Fig. 1;

[0044] Fig. 3 is an illustration of a screen for selecting a transmission destination server in the ~~above composite device~~ embodiment of Fig. 1;

[0045] Fig. 4 is a flow chart ~~for explaining the processing extending to~~ illustrating the transmission of a pickup image in the ~~above~~ composite device in accordance with ~~the~~ a second embodiment;

[0046] Fig. 5 is a flow chart ~~for explaining~~ illustrating the details of the processing of an interval step ~~processing in the above processing~~ in accordance with the second embodiment;

[0047] Figs. 6A, 6B and 6C ~~are illustrations of~~ illustrate screens for the setup of the ~~above~~ intervals;

[0048] Fig. 7 is an illustration of the memory map of a buffer memory in the composite device for storing the pickup image once in the case ~~of being incapable of~~ where transmission of the pickup image ~~transmission~~ is not possible in ~~the~~ a third embodiment of the invention;

[0049] Fig. 8 is an illustration of Transmission WAIT flags in the ~~above~~ buffer memory;

[0050] Fig. 9 is a flow chart ~~for explaining~~ illustrating the processing of the setup ~~to~~ of the ~~above~~ Transmission WAIT flag;

[0051] Fig. 10 is an illustration of one example of a function for notifying a user about the presence of a Transmission WAIT screen;

[0052] Fig. 11 is a flow chart ~~for explaining~~ illustrating the processing for the automatic transmission, ~~in case of becoming capable of communicating the~~ where the transmission of a pickup image stored once in the ~~above~~ buffer memory becomes possible;

[0053] Fig. 12 is an illustration of a ~~conventional~~ prior art method for ~~radio-transmitting the~~ transmitting a pickup image obtained in a pickup device by means of a communication device;

[0054] Fig. 13 ~~is an illustration of the situation~~ illustrates the transmission of a pickup image ~~being transmitted~~ to a server by means of the ~~above~~ communication device;

[0055] Fig. 14 is an ~~outside~~ external view of a composite device, comprising ~~of~~ the ~~above~~ pickup device and the ~~above~~ communication device;

[0056] Fig. 15 is a flow chart ~~for explaining the conventional~~ illustrating the processing ~~from depressing a shutter switch to~~ required for obtaining a pickup image ~~in~~ with the ~~above~~ composite device; and

[0057] Fig. 16 is a flow chart ~~for explaining~~ illustrating the processing ~~extending from obtaining~~ for transmitting a pickup image ~~to transmitting it in~~ from the ~~above~~ composite device.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0058] Hereinafter, the embodiments of the invention will be described referring to the drawings.

(First Embodiment)

[0059] The present invention, as illustrated in Figs. 1, 1A, and 1B, is ~~applied~~ directed to a composite ~~device (~~or multifunctional device[[)]] 100, comprising ~~of~~ a pickup device and a communication device~~, for example, as shown in Fig. 1 (composed of Figs. 1A and 1B)~~.

[0060] This composite device 100 is similar in external appearance to the ~~former~~ prior art composite device 510 shown in Fig. 14, but differs in ~~a configuration as to change into a certain mode absent in~~ that the composite device 100 provides a mode that does not require the manipulation of a switch to change modes, as does the ~~former~~ prior art composite device 510 ~~by making a given switching manipulation~~. In this mode, depressing ~~a~~ the shutter ~~switch~~ 512 ~~leads to the execution of a photographing~~ initiates an image capture operation, i.e., the taking of a photograph, in the composite device 100, and, at the same time, the automatic connection of the composite device 100 itself to a public network in such a manner as to transmit a pickup image to a remote ~~place~~ server. Here, the relevant mode is referred to as "direct transmission mode."

[0061] Hereinafter, the composite device 100 will be specifically described.

[0062] The composite device 100 has the image pickup function of a digital camera or the like and the ~~communicative~~ communication function of a PHS, a portable phone, or the like. The composite device of the invention ~~and~~ comprises an image pickup unit 110, an image processing unit 120, a peripheral unit 130, an LCD unit 140, a communication control unit 150, and a main control unit 160, as shown in Figs. 1A and 1B.

[0063] The image pickup unit 110 comprises a lens ~~unit~~ 111 composed of two ~~lenses~~ or more lenses and a diaphragm, an image pickup element 112 (hereinafter, designated ~~with~~ CCD) ~~for the incidence of a subject~~ on which light rays are focused by ~~via~~ the lens ~~unit~~ 111, a solenoid motor 115 for driving the lens ~~unit~~ 111, a CCD board 113 for driving the CCD 112, and a camera controller 114 for controlling the solenoid motor 115 and the CCD board 113. ~~And, the~~ The camera controller 114 is ~~so~~ configured ~~as~~ to operate in accordance with the control of the main control unit 160.

[0064] The image processing unit 120 comprises an image processing CPU 121 and a buffer unit 122 for accumulating image pickup images obtained in the image pickup unit 110.

[0065] The peripheral unit 130 comprises a switch group 132, including various ~~manipulating~~ switches and a shutter ~~switch~~ 512, a power source unit 133 for turning ~~ON/OFF~~ the power source of the composite device 100 ON/OFF, an external input/output unit 134 for inputting/outputting an image information item from/to the outside by the NTSC scheme or the like, and a controller (control microcomputer) 131 for controlling these.

[0066] The LCD unit 140 comprises a color liquid crystal display (LCD monitor) 141 (corresponding to the color liquid crystal display 514 in Fig. 14), a backlight/inverter 142 of the LCD monitor 141, and a controller (LCD controller) 143 for controlling ~~these~~ the display and backlight/inverter.

[0067] The communication control unit 150 is ~~so~~ configured ~~as~~ not only to establish the connection to the partner side by a call generation/call reception operation ~~determined corresponding to the type of a composite device 100~~ to a public network,

determined by the composite device 100, but also to deliver image data to a network according to a protocol, such as TCP/IP, and to ~~or~~ convert ~~the~~ a request from the partner side into a modification control signal in the composite device 100 ~~for notification~~.

[0068] For this purpose, the communication control unit 150 comprises a communication controller 151 for controlling the ~~communicating~~ communication operation, a communication buffer memory 152, connected to the communication controller 151, ~~and~~ a serial port 153, an IrDA port 154, and an RF modulator 155, ~~respectively~~ each connected to the communication buffer memory 152, and a transmitter/receiver antenna 156 connected to the RF modulator 155.

[0069] The main control unit 160 serves to concentrically manage the image pickup unit 110, the image processing unit 120, the peripheral unit 130, the LCD unit 140, and the communication control unit 150, and comprises a main CPU 161, a flash memory 162 for storing pickup images or transmission destination addresses, a buffer memory 163, used for the work region or the like of image processing in the image processing unit 120, and a program memory 164 in which processing programs for various controls or the like are stored in advance. ~~And, the~~ The flash memory 162, the buffer memory 163, and the program memory 164 are ~~respectively~~ each connected to the main CPU 161.

[0070] With such a composite device 100, as mentioned above, an ~~subject~~ image is picked up in the image pickup unit 110, and the processing of the obtained pickup image, through ~~extending to~~ its transmission to a server, is shown in the flow chart of Fig. 2. Hereinafter, this processing will be described.

[0071] ~~Incidentally, here, a~~ A case where the composite device 100 operates under its most characteristic direct transmission mode will be specifically described.

[0072] ~~Besides, in~~ In general, the radio transmission via a public network is largely dependent on the ~~surrounding~~ strength of the available radio ~~wave circumstances or~~ signal, the distance from the neighboring base station, the condition of the composite device 100 itself (standing still or moving), ~~or~~ and the like. However, ~~but here~~ for the

purposes of this disclosure, these changing factors are assumed to be absent for simplicity. ~~Besides~~ In addition, it is assumed that, after the connection to the transmission destination server (hereinafter, abbreviated to destination server) is established, no interruption during the communication occurs.

[0073] First, a user sets the composite device 100 to the direct transmission mode by manipulating a given ~~manipulating~~ switch in the switch group 132. ~~Correspondingly~~ As a result, a display indicating the direct transmission mode is displayed on the LCD monitor 14~~. Thereby,~~ enabling a user to easily recognize the direct transmission of the pickup image ~~becomes easy for a user to recognize~~.

[0074] The manipulation of the appropriate switch at this time is recognized by the main CPU 161 in the main control unit 160 via the controller 131 in the peripheral unit 130, so that the composite device 100 operates in the direct transmission mode.

[0075] ~~Besides, a~~ The user then selects the destination server from the screen (hereinafter, referred to as "transmission destination selecting screen") displayed in the LCD monitor 141 as shown in Fig. 3. The screen display at this time is ~~performed~~ under the control of the LCD controller 143.

[0076] Specifically, by manipulating a given ~~manipulating~~ switch in the switch group 132 or the like, a user registers the locations and phone numbers of destination servers (here, designated with server A, server B, server C, server D, . . .) in advance. This registration information item is stored in the database configured within the flash memory 162 of the main control unit 160 via the controller 131 in the peripheral unit 130. Thus, ~~it is allowed that~~ a registered information item stored in this database is read out and displayed on the LCD monitor 141 as the transmission destination selecting screen.

[0077] As shown in Fig. 3, the transmission destination selecting screen comprises a field 301 in which to display the name of a server, a field 302 in which to display the location of a server, a field 303 in which to display the phone number of a server with a user name and a password (not displayed), and, moreover, a manipulating key unit

305, including a "SELECT" key, an "OK" key, and a "CANCEL" key, and a ~~curser~~ cursor 304.

[0078] On such a transmission destination selecting screen, a user uses various keys of the manipulation key unit 305 and a ~~curser~~ cursor 304 to select and decide the destination server. Fig. 3 shows ~~a~~ the condition ~~that~~ in which the "server A" is selected. Such a manipulation is recognized by the main CPU 161 in the main control unit 160 via the LCD controller 143 in the LCD unit 140.

[0079] ~~Incidentally, the above-mentioned~~ The process of selecting the transmission destination may be performed after the switchover of the composite device 100 to the direct transmission mode or in another mode set up in advance. In either case, it is assumed that the destination server is selected ~~and decided already~~ before depressing the shutter ~~switch~~ 512. If ~~undecided~~ the intended destination server is not selected, this ~~purport~~ condition is displayed on the LCD monitor 141 ~~and notified to a~~ to notify the user, ~~for example,~~ either at the time of the switchover to the direct transmission mode or at the time ~~of depressing~~ the shutter ~~switch~~ 512 is depressed. ~~Or alternatively~~ As an alternative, ~~by using~~ an alarm may be sounded[[,]] ~~it is notified to a~~ to notify the user. ~~Besides, when~~ When the transmission destination is selected, ~~displaying~~ the transmission destination information is displayed together with the operation in the direct transmission mode on the LCD monitor 141, enabling ~~enables~~ a user to take a photograph while recognizing the direct transmission destination, which ~~and~~ can prevent ~~him from the~~ transmission to an erroneous destination by mistake.

[0080] In the above-mentioned manner, the composite device 100 is set to the direct transmission mode, and the destination server is selected.[[,]] ~~then when~~ When the shutter ~~switch~~ 512 in the switch group 132 is depressed by a user in [[(]]step S201[[)]], an interruption occurs to the main CPU 161 in the main control unit 160 via the controller 131 in the peripheral unit 130 in [[(]]step S202[[)]].

[0081] ~~Thereby~~ As a result, an output signal (pickup image signal) of the CCD 112 in the image pickup unit 110 is ~~taken into~~ transmitted to the image processing unit 120 in [[(]]step S203[[)]].

[0082] In the image processing unit 120, the image processing CPU 121 stores the pickup image signal from the image pickup unit 110 once into the buffer memory 122, and ~~various correction processing is made about~~ the image signal is processed for brightness, white balance, and the like ~~in the image signal~~. ~~Thereafter, in the main control unit 160,~~ The format of the pickup image signal is then converted to JPEG or the like in the main CPU 161 of the main control unit 160, ~~makes a format conversion of the pickup image signal subjected~~ subject to various corrections in the image processing unit 120, ~~into the JPEG form or the like~~ and the resultant pickup image data is stored into the flash memory 160 in [[(]]steps S204 and S205[[)]].

[0083] Then, in the main control unit 160, the main CPU 161 ~~discriminates to which~~ performs a discrimination to determine the mode setting of the composite device 100 ~~is set at present~~ in [[(]]step S206[[)]].

[0084] If the composite device 100 is found to be set to the direct transmission mode as a result of this discrimination, ~~the following processing from the~~ step S208 is executed.

[0085] On the other hand, if the composite device 100 is set to ~~another~~ a mode other than the direct transmission mode, i.e., to the normal transmission mode, the main CPU 161 ~~makes an~~ changes the operating mode ~~control~~ of the ~~overall~~ composite device 100 ~~so as to operate~~ according to the flow chart shown in Fig. 16 in [[(]]step S207[[)]].

[0086] If the composite device 100 is set to the direct transmission mode, the main CPU 161 in the main control unit 160 examines the current strength of the available radio ~~wave state~~ signal via the transmission control unit 150 in [[(]]step S208[[)]].

[0087] ~~In case of transmission~~ When an "OK" signal is transmitted as a result of ~~this~~ step S208, ~~the~~ processing ~~from the subsequent~~ starting with step 210 is executed. ~~On the other hand, in case of transmission~~ However, if an "NG" signal is transmitted, the main CPU 161 displays a message indicating that ~~purport~~ condition (communication impossibility) or the like on the color LCD monitor 143 in the LCD unit 140 in [[(]]step S209[[)]].

[0088] ~~Incidentally, at the~~ However, in step S209, instead of the display of communication impossibility, ~~the purport may be notified to~~ a user may be notified of the condition with ~~by using~~ an alarm sound or the like.

[0089] If the strength of the available radio wave ~~state~~ is sufficient for transmission ~~OK~~, a call ~~generation and call reception~~ is generated to a public network ~~are performed in~~ by the composite device 100, and reception is confirmed ~~as~~ with ~~the~~ steps S537 to S539 shown in Fig. 16 in [[(]]step S210[[)]].

[0090] ~~Incidentally, since~~ As the flow between this call generation and the public network connection and the process of negotiation with the destination server after the call ~~reception~~ is received differ ~~in~~ depending on the communication method~~, or use~~ and protocol, ~~here, it is simply discriminated~~ a simple discrimination determines whether the destination server responds to the call ~~reception~~ or not. ~~And, if~~ If the destination server does not respond to the call ~~reception for a reason that~~ because the communication port of the server is in use ~~or so~~, a busy message ~~of being busy~~ is returned to the composite device 100. In this is the case, the main CPU 161 ~~makes an operating control for notifying a message or the like indicating the purport~~ signals the condition (communication impossibility) to a user ~~by~~ using the display on the color LCD monitor 143 of the LCD unit 140, or by an alarm sound or the like in [[(]]step S211[[)]]. Thus, only if the call reception and negotiation ~~proceeds~~ proceed normally, and the communication between the composite device 100 and the transmission destination server is established, can the processing steps ~~from~~ starting with the next step S212 ~~are~~ be executed.

[0091] When the communication between the composite device 100 and the destination server is established by the call generation and call reception ~~at the~~ in step S210, the main CPU 161 in the main control unit 160 transfers the pickup image data within the flash memory 162 once to the buffer memory 163 in [[(]]step S212[[)]].

[0092] ~~And, the~~ The main CPU 161 then decomposes the pickup image data within the buffer memory 163 (assumed to be image data of JPEG type) into packets

according to a protocol such as TCP/IP, and supplies those packet data to the communication unit 150 in [[(]]step S213[[)]].

[0093] In the communication unit 150, the communication controller 151 converts the packet data from the main control unit 160 in accordance with the procedure determined ~~corresponding to~~ by the type of a composite device 100 (here, assumed to be a transmission control procedure such as "PIAFS"), and stores the packet data after this conversion ~~into~~ in the communication buffer memory 152 in [[(]]step S214[[)]].

[0094] After ~~converted into~~ conversion to a frequency band adapted to the device by means of the RF module 155, the packet data within the communication buffer memory 152 are transmitted to the base station via the antenna 156, and transmitted to the destination server through a public network in [[(]]step S215[[)]].

[0095] In the server that received this, the pickup image is restored through the ~~procedure~~ reverse procedure to correspond to the ~~above~~ image in the composite device 100.

[0096] After the transmission of the packet data (pickup image data) within the communication buffer memory 152 ends, the main CPU 161 on the main control unit 160, having recognized this end, issues a request for disconnection to the communication controller 819 in the communication unit 150. ~~Thereby, as~~ As with the ~~above~~ processing ~~at the~~ for call generation discussed above, the communication controller 819 ~~makes a~~ ends communication ~~end~~ processing in accordance with the specified procedure in [[(]]step S216[[)]].

[0097] As mentioned above, in this embodiment, since the direct transmission mode is ~~so~~ configured ~~as to be set up in which a~~ to initiate communication with the remote ~~place~~ server via a public network ~~is~~ automatically ~~made at~~ once ~~after~~ the shutter ~~switch~~ 512 is depressed, and pickup images are automatically transmitted if the communication with the server is executable, a user can transmit the pickup image ~~obtained by photographing~~ to a desired server ~~at once only by a simple manipulation of~~ by simply changing the mode of the composite device 100 ~~into~~ to the direct transmission mode. Thus, every time ~~of~~ a pickup image ~~transmission~~ is transmitted, a

user need not ~~repeat the selection of~~ select a transmission image, ~~the mode~~ change the mode to the direct transmission mode, ~~the selection of~~ select a destination server, or ~~like~~ perform similar operations, unlike former devices.

[0098] ~~Incidentally, if~~ If the ~~above~~ composite device 100 is ~~applied to the~~ utilized for relay use or the like, i.e., if no pickup image always needs to be stored in the composite device itself 100, the process of ~~write in~~ writing to the flash memory 162 and reading from the flash memory 162 to the buffer memory 163 at ~~the~~ steps S205 and S212 in Fig. 2 is unnecessary.

[0099] In such cases, for example, assuming that the buffer memory 163 is configured ~~by~~ with a ~~speedier~~ faster buffer memory, ~~and images~~ after configuration of the ~~image~~ pickup image ~~is so configured as to be transmitted~~ for transmission to a server directly through the communication unit 150, the memory region for image storage in the composite device 100 can be effectively used without waste.

(Second Embodiment)

[0100] In ~~addition to the configuration of the first embodiment, this~~ a second embodiment, ~~is so configured that~~ in the direct transmission mode, the call generation and call reception processing is skipped if the time ~~taken from~~ between a first depression of the shutter ~~switch~~ 512 to a second depression of the shutter ~~switch~~ 512 ~~lies~~ falls within a given ~~period of time~~ range.

[0101] The processing ~~of~~ in this ~~case~~ embodiment from the pickup of an image ~~subject~~ to the transmission of the pickup image to a server ~~in~~ with a composite device is shown in the flow chart of Fig. 4.

[0102] ~~Incidentally, in~~ In the flow chart of Fig. 4, ~~like~~ symbols ~~are attached to~~ for steps for executing a ~~processing~~ step similar to that of the flow chart of Fig. 2 and their detailed description ~~will be~~ are omitted. Here, a specific description will be made only of a configuration different than the first embodiment.

[0103] First, when ~~a first depression of~~ the shutter ~~switch~~ 512 is ~~made~~ first depressed, a pickup image is obtained as mentioned above, and the ~~present~~ mode of the composite

device 100 is ~~discriminated to be~~ the direct transmission mode in [[(]]step S206[[)]], ~~it is discriminated~~ a determination of whether the discrimination flag is "ON" or not is made thereafter in [[(]]step S250[[)]].

[0104] This flag (discrimination flag) is, for example, an inner flag of the main CPU 161 in the main control unit 160, and is set to "ON" or "OFF" in the interval ~~step mentioned below of the~~ step S270 discussed below with regard to Fig. 5. ~~And it is configured that, if this~~ If the discrimination flag is "ON", ~~the~~ step S208 to ~~the~~ step S210 are canceled, and the processing steps ~~from the next~~ starting with step S212 are executed.

[0105] ~~Here, since the first depression time of~~ When the shutter ~~switch~~ 512 is ~~discussed~~ depressed for the first time, the discrimination flag is "OFF." Thus, ~~in the above-mentioned manner~~ as discussed above, ~~the~~ call generation and call reception processing is carried out according to ~~the~~ steps of S208 to S210, ~~is carried out~~ and the transmission of a pickup image to the server is executed if communication with the destination server is possible in [[(]]step S215[[)]].

[0106] Then, in the interval step of ~~the~~ step S270, processing according to the flow chart of Fig. 5 is carried out.

[0107] Namely, in the main control unit 160, ~~first,~~ the main CPU 161 first sets the timer for a predetermined period of time ~~inside of it~~ in [[(]]step S270[[)]], and ~~keeps waiting while monitoring~~ waits for the occurrence of an interruption caused by a depression of the shutter ~~switch~~ 512 ~~at the~~ in step S202 in [[(]]step S271[[)]].

[0108] Next, the main CPU 161 discriminates whether ~~a value of~~ the time ~~becomes~~ is "0" or not in [[(]]step S272[[)]], and the discrimination flag is set to "OFF" if ~~a value of~~ the time is 0 in [[(]]step S273[[)]]. Thereafter, this processing ends.

[0109] On the other hand, if ~~a value of~~ the time ~~does not reach~~ is not 0, the main CPU 161 ~~discriminates~~ determines whether an interruption due to a depression of the shutter ~~switch~~ 512 has occurred in [[(]]step S274[[)]]. If an interruption occurs as a result of this discrimination, the main CPU 161 set the discrimination flag to "ON" in [[(]]step

S275[[)]]. Thereafter, this processing ends. ~~Besides, if~~ If no interruption occurs, the procedure returns to ~~the~~ step S271, and the interruption waiting state appears.

[0110] Accordingly, when the shutter ~~switch~~ 512 is depressed ~~at~~ a second time within ~~a~~ the predetermined time set ~~up~~ on the timer inside the main CPU 161 from the first depression of the shutter ~~switch~~ 512, the processing ~~from the above-mentioned~~ starting with step S201 is carried out in the "ON" state of the discrimination flag, and the discrimination of ~~the~~ step S250 cancels the call generation and call reception at ~~the~~ steps of S208 to S210, so that the transmission processing of a pickup image from ~~the~~ step 212 is executed ~~as it stands~~.

[0111] ~~Besides, when~~ When the shutter ~~switch~~ 512 is depressed ~~at the next time~~ again after the lapse of a predetermined time set ~~up~~ on the timer inside the main CPU 161 from the first depression of the shutter ~~switch~~ 512, the processing from the above-mentioned step S201 is carried out in the "OFF" state of the discrimination flag, and the discrimination of ~~the~~ step S250 permits the call generation and call reception ~~at the~~ of steps ~~of~~ S208 to S210 to be executed, as ~~done~~ during the first depression of the shutter ~~switch~~ 512, so that the transmission processing of a pickup image ~~from the~~ starting with step 212 is executed.

[0112] As mentioned above, in this embodiment, ~~is so configured that~~ the interval is provided only during a predetermined time after the end of the transmission of the pickup image ~~transmission~~ to the transmission break.

[0113] ~~Setting~~ The of ~~a~~ the timer in the main CPU 161 for this purpose is considered in various ways ~~depending on uses or circumstances~~ by the CPU 161, depending on the use and circumstances, but its matching to the unit charging time of a network connection fee can ~~suppress the occurrence of a~~ reduce wasteful fees~~, for example, from the viewpoint of economics~~.

[0114] Such being the case, Figs. 6A, 6B and 6C show one example of a time spacing setting screen ~~of~~ for the ~~above~~ interval. The display of these screens is performed under control of the LCD controller 143 over the LCD monitor 141 in the LCD unit 140.

[0115] In Figs. 6A, 6B and 6C, the first setting screen 311 is so configured that any one of economy priority mode (ECONOMY), business emphasis mode (BUSINESS) and user manual setting mode (USER SETTING) is selectable, ~~corresponding to the uses of a~~ depending on the needs of the user. Here, the screen state is shown in which a user selects the economy priority mode (ECONOMY).

[0116] The next setting screen 312 is ~~a screen at the time of~~ used for selecting the economy priority mode (ECONOMY), and is ~~so~~ configured so that a user can ~~confirm~~ determine the ~~list of the~~ minimum time for which a ~~charging second in communication~~ fee is charged, depending on the time and district, and can ~~instruct~~ "OK" or "CANCEL[[.]]" the connection. The numeral "45" indicated by the arrowhead 313 in Fig. 6B is the minimum ~~charged seconds extracted~~ amount of time charged, determined from the ~~present~~ time and ~~the~~ relative distance between the destination server and the composite device 100, and, ~~it is configured~~ in the economy priority mode (ECONOMY), that ~~the~~ interval spacing is set at ~~this~~ "45" seconds.

[0117] ~~Incidentally, in~~ In the case of ~~using a mobile for~~ the use of the ~~communicative~~ communication function of ~~a~~ the composite device 100, the position of the ~~personal set~~ user is not definite, and the relative distance to the server varies, so ~~that at this time~~ a user ~~previously~~ may set ~~a rough~~ an estimated position, for example. ~~Besides, in~~ In the case of using a PHS, a change in distance is automatically ~~coped with~~ determined by ~~using~~ the position information of CS.

[0118] ~~On the other hand, the~~ The setting screen 314 is ~~a~~ the screen ~~at the time of selecting~~ used to select the business emphasis mode in which the availability and instantaneous response is ~~thought~~ considered more ~~of~~ important than the economics, and is ~~so~~ configured ~~that~~ to allow a user ~~can~~ to set the interval spacing with the interval kept always constant ~~independently~~ independent of the destination server.

[0119] ~~Incidentally, in~~ In this mode, to enhance the instantaneous response, it is advisable to send out data directly from a buffer memory 163 without writing data into a flash memory 162 as mentioned above.

[0120] ~~Meanwhile, the time of selecting the~~ The user manual setting mode is not shown ~~in no drawing~~, but, based on a screen ~~taking an~~ form intermediate ~~form~~ between the above-mentioned setting screens 312 and 314, it is ~~so~~ configured ~~as to be selectable as~~ to allow a user ~~likes~~ to set ~~the~~ a longer interval time ~~a little longer~~ for a server in the same district, to set ~~the~~ a shorter interval time ~~a little earlier~~ for a server in a far district, or to change the setting, depending on the destination server~~, for example~~.

[0121] According to this embodiment, as mentioned above, if another pickup image is transmitted at once after the completion of transmitting a certain pickup image in the direct transmission mode, the connection to a public network is not broken, so long as the elapsed time is within the ~~above~~ interval time, so that the preprocessing required at the time of a normal connection (recalling to a public network, negotiation, connection processing to the destination server and the like) can be automatically skipped.

[0122] Thus, the time for the preprocessing for the connection to a public network ~~taking much time~~ can be omitted, and the image transmission can be effectively carried out. Furthermore, missing the ~~shutter chance occurring continuously~~ opportunity for a photograph can be prevented.

[0123] ~~Besides, an~~ An appropriate selection of the interval time ~~permits the~~ provides compatibility between economics and an instantaneous response. ~~Incidentally, in~~ In the ~~above~~ description above, measuring the time of the interval starts after the end of the transmission ~~end~~, but it is more economic from the viewpoint of the fee system, where ~~that~~ a fee is charged ~~at each lapse of a~~ for a definite interval of time after the start of the transmission, ~~start~~ to break the communication directly before ~~the charging~~ an additional fee is charged. For this purpose, it is effective to judge the break of communication at ~~each lapse of a definite~~ interval of time after the start of the transmission. ~~start.~~

(Third Embodiment)

[0124] In the first embodiment, as shown in Fig. 2, ~~it is configured~~ if the strength of the available radio ~~wave state~~ signal is bad, and the transmission is impossible or unstable (~~in case~~ that is, the result of a discrimination at ~~the~~ step S208 is "NG") when ~~a subject is picked up in~~ the image pickup unit 110 ~~and transmission instruction~~ is ~~made~~ in the direct transmission mode, and is instructed to transmit a pickup image ~~during the processing extending to the transmission of the obtained pickup image~~ to a server, ~~that~~ a message or ~~the like of~~ similar communication of the impossibility of transmission is displayed on the color LC 143.

[0125] ~~Such being~~ If this is the case[[,]] in this embodiment, pickup images to be transmitted (untransmitted images) are stored once in a memory, the transmission state returns to the photographic state before the completion of the transmission processing ~~for~~ of untransmitted images, and the untransmitted images stored in the memory are automatically retransmitted when the radio ~~wave state~~ signal is stabilized.

[0126] Configuring the hardware and software for implementing this makes it unnecessary ~~that~~ for a user ~~waits~~ to wait for ~~the recovery of~~ an improvement in the radio ~~wave state~~ signal, ~~prevents the impossibility of~~ allows the photographing of a subject before the completion of a transmission, and makes ~~unnecessary the movement~~ moving to a place where the radio ~~wave state~~ signal is good for the transmission unnecessary, so that photographing a subject ~~becomes~~ is possible even before the radio ~~wave state~~ signal is recovered. In other words, ~~a user becomes free of the photographic obstruction due to~~ a bad radio ~~wave state and can take a~~ signal does not interfere with a users ability to take photographs ~~smoothly~~.

[0127] Hereinafter, one example ~~of configuration~~ of this embodiment will be ~~specifically~~ described.

[0128] First, ~~with respect to a~~ the hardware ~~configuration, this~~ is fundamentally the same ~~configuration~~ as that shown in Figs. 1A and 1B, but the capacity of ~~a~~ the buffer memory 163 in the main control unit 160 is ~~made~~ greater than that ~~of a configuration according to~~ in the first embodiment. This is because the buffer memory 163 is ~~further~~ also used as an image data buffer for storing untransmitted images in this embodiment,

whereas it is chiefly used as a work area ~~attendant on~~ in the main CPU 161 in the first embodiment.

[0129] Here, the reason of using a buffer memory 163 rather than a flash memory 162 as the memory for storing the untransmitted image once is that ~~a speedier~~ faster access ~~is possible for~~ to the buffer memory 163 ~~than for~~ is possible compared to the access to the flash memory 162, and the elapsed time ~~taken till~~ before the release of a device (restoration to the photographing state) ~~can be~~ is shortened by this improved speed. Besides, the buffer memory 163 is not necessarily used only for ~~the~~ image transmission, but also as a simple image buffer, and, accordingly, becomes effective as a so-called snapshot buffer.

[0130] ~~Incidentally, the description of the reason for the~~ The use of the ~~above~~ buffer memory 163 ~~means that to use the buffer memory 163~~ is ~~better than to~~ faster than the use of the flash memory 162, but ~~and as a matter of fact,~~ does not ~~denies~~ prevent the use of the flash memory 162. ~~Namely, if~~ If the flash memory 162, which has a low ~~in~~ unit capacity price, is employed as the memory for storing untransmitted images once, more time is required for ~~the~~ storing an untransmitted image ~~into~~ in the flash memory 162, but ~~a merit~~ the advantage of being ~~capable of storing~~ able to store more ~~imaged~~ images at a lower cost cannot be disregarded.

[0131] ~~Besides, here~~ In this embodiment, a buffer memory 163 or a flash memory 162 is used as the memory for storing untransmitted images once, but the present invention is not limited to ~~this~~ a buffer memory 163 or a flash memory 162. For example, a dedicated memory for storing untransmitted images once may be provided.

[0132] ~~Such being the~~ In such a case, ~~a~~ the buffer memory 163 here is made up of different areas, as shown in the memory map ~~of~~ in Fig. 7.

[0133] To be specific, the buffer memory 163 is broadly divided into a work area 410 and a data area 420, as shown in Fig. 7.

[0134] The work area 410 is a memory area used in the packing, unpacking, or the like of images, as described in the first embodiment, and its fundamental uses are also similar ~~also~~ in this embodiment.

[0135] The data area 420 is a memory area added in this embodiment for ~~continuously and speedily storing the~~ the continuous and rapid storage of photographed images (photographic image~~s~~), converted into a given format in the work area 410 within the capacity of the relevant memory.

[0136] The data area 420 is further divided into a memory area 421 for storing a file administrating table (FAT) and the like and a memory area 422 for storing image data and the like.

[0137] In the memory area 421, as shown in Fig. 8, for example, information items ~~of~~ regarding various image files (photographic images) ~~gather~~ are stored in a FAT. In addition to the information ~~content~~ comprising serial numbers 431, final ~~updated~~ dates 432, start addresses 433, and end addresses 434, photographic data 435, such as photographic resolution, shutter speed, and the diaphragm setting ~~are~~ may also be stored, ~~as those peculiar to an~~ depending on the image pickup device.

[0138] ~~In particular, it is characteristic here that~~ Typically, one transmission WAITING flag 435a is added to the data for each ~~of~~ photographic ~~images~~ image in ~~the zone of~~ photographic data zone 435.

[0139] This transmission WAITING flag 435a is added in the direct transmission mode, but ignored in the other modes, thus ~~yielding~~ providing priority to the ordinary processing ~~as~~ of the photographic buffer. Thus, transmission of the WAITING flags 453a ~~vary~~ varies with the radio ~~wave states of photographing instances~~ signal strength during photography in the direct transmission mode.

[0140] Fig. 9 is a flow chart showing the processing ~~of setting to~~ required to set the ~~above~~ transmission WAITING flag 435a. This ~~setting~~ processing is executed, for example, by the main CPU 161.

[0141] First, ~~in~~ during the processing shown in Fig. 2, if the radio ~~wave state is~~ signal strength results in an NG condition at the time of image transmission as a result of the discrimination ~~at the~~ in step S208 in [[(]]step S441[[)]], the pickup images stored in the flash memory 162 are once copied to the data area 420 of the buffer memory 163 in [[(]]step S442[[)]].

[0142] ~~Incidentally, this~~ This step ~~processing~~ comes directly after the ~~photographing and~~ capture of an image, but is not limited to this before pickup images are stored ~~into~~ in the flash memory 162.

[0143] Next, the transmission WAITING flag 435a, corresponding to the pickup ~~images~~ image copied to the data area 420 of the buffer memory 163 at ~~the~~ step S442 is set to "ON" in [[(]]step S443[[)]].

[0144] ~~And, using~~ Using functions ~~mentioned later pertaining~~ discussed below with regard to a composite device 100, the user is notified of the presence of transmission WAITING images (untransmitted images) ~~is notified to a user~~ in [[(]]step S444[[)]], and this transmission state ~~returns~~ is immediately changed to the ~~photographing possible ordinary~~ normal photography state in [[(]]step S445[[)]].

[0145] ~~As examples of functions pertaining to a~~ Examples of how the composite device 100 ~~which were mentioned at the above~~ may notify the user of the WAITING flag 435a in step S444[[,]] ~~a function to display~~ and how many untransmitted images remain on a color LC 143 ~~by using~~ while untransmitted images are stored in memory include the display of icon(s), a ~~function to blink the provided~~ blinking LED, ~~while untransmitted images remain or~~ and the like ~~are considered~~.

[0146] Here, ~~as one~~ for example, ~~thereof, a function to display~~ the presence or absence of untransmitted images remaining on a color LC 143 is displayed ~~by~~ using icon(s) ~~is used~~.

[0147] According to this ~~function~~ embodiment, on the color LC 143, as shown in Fig. 10, two icons indicating that two untransmitted images remain are displayed ~~at~~ in the upper zone 452 of the area 451. These icons ~~change in the state of~~ indicate stored untransmitted images, and the number of icons increases as the number of untransmitted images increase. ~~And if~~ Once the relevant untransmitted image ~~is~~ has been transmitted, the user is notified of the state of each untransmitted image ~~is notified to a user~~ by ~~changes~~ a change in the icon, such as blinking or the like.

[0148] As mentioned above, here, ~~since it is configured~~ in case of a bad radio ~~wave state~~ signal, such that communication is impossible or unstable, ~~and transmitting~~

~~impossibility or instability that~~ untransmitted images are stored once in the buffer memory 163, and the transmission state returns to the photographic state before the completion of the transmission ~~processing for~~ of untransmitted images. As a result, a user can keep taking ~~a~~ photographs smoothly even in case of a bad radio ~~wave state~~ signal.

[0149] The untransmitted images stored in the buffer memory 163 are automatically retransmitted when the radio wave state is recovered.

[0150] Accordingly, as mentioned above, the communication control unit 151 for monitoring the radio ~~wave state~~ signal strength always exchanges ~~an~~ information ~~item~~ about the strength of the radio ~~wave state~~ signal with the main CPU 161, and the main CPU 161 ~~discriminates~~ determines, based on information ~~items~~ from the communication control unit 151, whether ~~the~~ communication is possible or not.[[,]] ~~whereas further~~ In addition, in this embodiment, the main CPU 161 monitors the respective transmission WAITING flags 435a provided for individual pickup images stored in the buffer memory 163, and automatically executes the processing required for a transmission ~~processing~~ as shown in Fig. 11 ~~at the background at the time~~ when the radio ~~wave state~~ signal becomes ~~communicable if even one of the~~ sufficient for transmission, and at least one of the transmission WAITING flags 435a indicating stored transmission WAITING images (images of flag = "ON") remains.

[0151] In the ~~above~~ transmission processing, first, the communication control unit 151 checks the radio wave state in [[(]]step S461[[)]], ~~discriminates~~ determines whether the radio ~~wave state is~~ signal has recovered in [[(]]step S462[[)]], and issues an interruption demand to the main CPU 161 if the signal has recovered.

[0152] ~~Incidentally, if~~ If it is determined that the radio ~~wave state~~ signal has not yet been restored ~~as a result of discrimination at the~~ in step S462, the communication control unit 151 ~~keeps on checking~~ continues to monitor the radio signal strength ~~wave state as it is~~.

[0153] By checking ~~of~~ the ~~above-mentioned~~ transmission WAITING flags 435a for individual pickup images after receiving the interruption from the communication

control unit 151, the main CPU 161 ~~discriminates~~ determines whether transmission WAITING images (images of flag = "ON") remain or not in [[(]]step S463[[)]].

[0154] If it is determined that no transmission WAITING image (image of flag = "ON") ~~remains~~ remain, i.e., if all transmission WAITING flags 435a are "OFF", ~~as a result of discrimination at the~~ in step S463, the ~~transmission processing returns~~ mode is changed to the ordinary ~~processing as it is~~ mode in [[(]]step S466[[)]].

[0155] On the other hand, if it is determined in step S463 that transmission WAITING images (images of flag = "ON") remain, ~~as a result of discrimination at the step S463~~, the main CPU 161 proceeds to the multi task mode by the pause or division of the processing in execution in [[(]]step S464[[)]].

[0156] This multi task mode is a mode ~~of performing a~~ in which transmission ~~processing~~ of untransmitted images is processed in parallel with the processing of ordinary photographing, perusal and the like. As methods for implementing this, various methods are considered depending on the type of a CPU, ~~a~~ the hardware ~~configuration~~ and the software ~~configuration~~.

[0157] ~~And, at~~ When the ~~time of~~ transmission ~~end~~ of ~~an~~ a previously untransmitted image is complete, the main CPU 161 sets the transmission WAITING flag 435a corresponding to the relevant image to "OFF" ~~by the processing of the~~ in step S464.

[0158] ~~Besides, simultaneous to this~~ Simultaneously, the main CPU 161 executes the processing ~~of eliminating one of~~ required to eliminate the icons indicating the presence of untransmitted images on the color LC 143, as shown in Fig. 10, from the relevant screen in [[(]]step S465[[)]].

[0159] ~~After the processing of the~~ Following the execution of step S465, ~~the processing from the~~ step S462 is again executed. Namely, the processing ~~at the~~ required for steps of S462 to S465 ~~are~~ is repeated and executed ~~till~~ until all transmission WAITING flags 435a provided for individual pickup images stored in the buffer memory 163 ~~becomes~~ are turned "OFF."

[0160] Accordingly, the ~~above~~ processing ~~configuration~~ described above enables a user to continue photographing regardless of ~~any~~ the strength of the radio ~~wave state~~

signal. Thus, ~~according to~~ the convenience of the third embodiment, ~~the effect that the convenience can be~~ is enhanced is ~~obtained in addition~~ relative to that of the first embodiment.

[0161] ~~Incidentally, in the above description~~ As described above, a composite device in which image pickup means and ~~communicative~~ communication means are integrated is used. However, ~~but~~ in the present invention ~~may be so configured as to connect~~ a communication device may also be connected to an image pickup device through a cable or the like. In this case, if transmission of the images is not required, no communication device is necessary, ~~for example,~~ and it is only necessary to carry the image pickup means alone, ~~and therefore the necessaries to~~ reducing the weight of the items be carried ~~are light in weight~~.

[0162] ~~Needless to say, the~~ The purpose of the present invention ~~is~~ may also be attained ~~also~~ by supplying a storage medium on which the program codes of the software for implementing the function of the host and terminal in the individual embodiments mentioned above are stored to ~~the~~ a system or device, ~~in which the program codes of the software for implementing the function of the host and terminal in the individual embodiments mentioned above are stored~~ and allowing the computer (or CPU or MPU) of the system or device to read and execute the program codes stored in the storage medium.

[0163] In this ~~case~~ embodiment, the program codes themselves are read from the storage medium, ~~implements~~ and implement the function of each embodiment, and the storage medium in which the program codes are stored constitutes the present invention.

[0164] As storage media for supplying a program code, ROM, a floppy disk, a hard disk, an optical disk, a photomagnetic disk, a CD-ROM, a CD-R, a magnetic tape, a nonvolatile memory card and the like can be used.

[0165] ~~Besides, needless to say, not~~ Not only the function of each embodiment is implemented by executing the program codes read out by a computer, but, ~~also a~~ in the case where an OS or the like operating on the computer performs a part or the whole

of an actual processing based on the instruction of the program codes, ~~and~~ the function of each embodiment ~~is~~ implemented by the relevant processing is also included in the invention.

[0166] ~~Furthermore, needless to say, a~~ In the case where a program code, read ~~out~~ from a storage medium ~~are~~ is written into an extended function board inserted in a computer or a memory, provided on an extended function unit connected to a computer, then, based on the instruction of the program code, a CPU or the like provided on the extended function board or the extended function unit performs a part or the whole of an actual processing, and the function of each embodiment ~~is~~ implemented by the relevant processing is also included in the invention.

[0167] In the present invention, as described above, an image pickup operation and a communication with a specified transmission destination (such as radio transmission) is started on the basis of the instruction of a predetermined operation given ~~from~~ by a user. Thereby, the pickup images obtained by the image pickup operation are automatically transmitted.

[0168] ~~Besides, at this time, after~~ After the lapse of a predetermined time (a definite interval) from the end of transmission to a specified transmission destination, a communication break ~~of communication~~ with the transmission destination (release of connection to the communication network) is made.

[0169] Specifically, when a predetermined operation with a ~~manipulating~~ switch is performed by a user, for example, the operating mode of ~~this~~ the device is switched to a predetermined mode. On depressing ~~a~~ the shutter, ~~switch, this~~ the device, ~~under the~~ in a predetermined mode, starts an image pickup of a subject, and, ~~moreover makes a call generation of~~ simultaneously, initiates radio ~~transmission~~ communication with a preset transmission destination (starts an image pickup operation and a communicating operation at the same time). Thereby, the pickup images obtained by an image pickup are automatically transmitted to a preset transmission destination.

[0170] According to ~~such a configuration~~ this embodiment, a user can simultaneously send the pickup images obtained by photographing an image to a desired transmission

destination ~~only by a simple manipulation of~~ by simply switching the operating mode of ~~a~~ the device to a predetermined mode.

[0171] Thus, unlike ~~a~~ the former case, a user need not ~~to~~ repeatedly ~~and~~ perform the ~~processing of~~ selection of a transmission image, ~~mode~~ the change to the transmission mode, the selection of a transmission destination, and the like each time ~~of~~ ~~transmitting~~ a pickup image is transmitted. Consequently, even in the case of ~~a~~ successive transmissions during ~~the~~ continuous ~~photographing or the like~~ photography, an effective transmission of pickup images can be carried out without once interrupting the ~~photographing~~ photography, and without missing the ~~shutter chance~~ opportunity for a photograph.

[0172] ~~Besides, after~~ At the end of the transmission of pickup images to a transmission destination, the communication with the destination is not simultaneously broken, ~~and~~ but is terminated ~~with a definite~~ after a predetermined interval ~~provided in the meantime~~. Thereby, if ~~a~~ the shutter ~~switch~~ is depressed within the ~~definite~~ predetermined interval, ~~a~~ the generation of a call is not required before the transmission of the next pickup image ~~is made not through the call generation processing performed again~~.

[0173] According to ~~such a configuration~~ this embodiment, in case of ~~transmitting~~ the transmission of another pickup image ~~directly~~ immediately after the end of the transmission of a ~~certain~~ previous pickup image, the preprocessing (recall generation to a public network and negotiation, processing of connection to a destination server and the like) required at the time of the ordinary connection can be automatically skipped because the connection to the public network is not broken within the ~~above~~ predetermined time interval ~~time~~.

[0174] Thus, the preprocessing of the connection to a public network, generally taking much time, can be omitted, and ~~an~~ image transmission can be effectively made. This is especially effective at the time of continuous ~~photographing and missing any continuously occurring shutter chance can be~~ photography, such that lost opportunities for photographs are prevented.

[0175] Furthermore, the selection of ~~an~~ a predetermined time interval permits the choice of making either ~~the economics priority~~ cost or ~~the~~ instantaneous response the priority ~~to be selected~~.

[0176] ~~Besides, if~~ In addition, if the communication state (radio ~~wave state~~ signal strength for wireless transmission) is unsuitable ~~to the communication in~~ for transmitting a pickup images to a destination server (when an instruction of transmission was made), ~~a configuration of once storing~~ the pickup images (untransmitted images) may be stored into a memory, ~~enables~~ enabling a user to continue ~~a smooth~~ photographing without the need of waiting ~~till~~ until the radio ~~wave state~~ signal is recovered, and without ~~need of moving~~ needing to move to a place ~~of a~~ having a good radio ~~wave state even for a bad radio wave state~~ signal. Furthermore, ~~if it is~~ the invention may be configured ~~that~~ to automatically transmit the pickup images stored once in a memory ~~are automatically transmitted~~ when the radio ~~wave state~~ signal is restored to a state suitable for the communication, enhancing the convenience ~~is enhanced~~ of the invention.

[0177] Thus, the present invention enables a user to continue ~~photographing~~ to take photographs, regardless of ~~any~~ the strength of the radio ~~wave state becomes possible and the convenience can be~~ signal, further ~~enhanced~~ enhancing the convenience of the invention.

ABSTRACT OF THE DISCLOSURE

[0178] A communication device is provided which is capable of transmitting pickup images efficiently with high portability, manipulativity, and instantaneous response. ~~The communication device is disclosed in which according to one preferred embodiment, a~~ A control apparatus starts a ~~communicating~~ communication (such as a radio transmission) operation in a communication apparatus simultaneous ~~to~~ with an image pickup operation in an image pickup ~~function~~ operation when ~~a predetermined~~ the operation is ~~instructed by a manipulation of a manipulation apparatus from~~ initiated by a user in a communication device having the image pickup function. Thereby, the pickup images obtained ~~by~~ in the image pickup ~~function~~ operation are automatically transmitted to a specified transmission destination via a ~~communicative~~ communication apparatus. Thus, a user can obtain and transmit pickup images to a desired transmission destination simultaneously ~~only~~ by ~~making a simple manipulation of changing~~ simply setting the operating mode of the device to a predetermined mode or the like.